NASA Glenn Success Stories

Atomic Oxygen Textured Surfaces for Blood Glucose & Other Analyte Monitoring

Light • Pointe MEDICAL, INC.

TECHNOLOGY

As a result of NASA's research on low Earth orbital atomic oxygen interactions with spacecraft materials, this technology was discovered and thereafter developed in collaboration with Light • Pointe Medical. This process produces microscopic cones on the tip surface of optical fibers to allow the rapid measurement of blood glucose and other analytes. The texturing provides a separation of red cells from blood plasma, increases the surface area on the fiber tip with less blood volume required, and provides a faster measurement response time at a low sensor cost. The cones are coated with reagents and chemicals to provide an accurate color change measurement of blood glucose level.

COMMERCIAL APPLICATIONS

- Blood glucose monitoring for point-of-care and home use.
- Measurements of other blood analytes, and DNA detection of biological, pollutant and other medical and non-medical agents.

SOCIAL / ECONOMIC BENEFITS

- Significantly lower the cost of blood glucose monitoring and the testing of other analytes.
- Provide faster, easier, less painful, and low-cost glucose monitoring for people with diabetes in underserved world-wide markets.
- Bring DNA medical and non-medical diagnostics to a wider market.
- Less blood is needed for testing and blood samples can be taken from less sensitive places on the body.
- This technology will allow for more frequent monitoring and therefore better potential for control of blood glucose levels.

Light • Pointe's blood glucose sensor with atomic oxygen-textured PMMA optical fiber

NASA APPLICATIONS

- This new technology allows for small volume blood sampling, rapid testing of blood glucose (and other analytes) at a very low cost per test.

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Date of Technology: May 2008